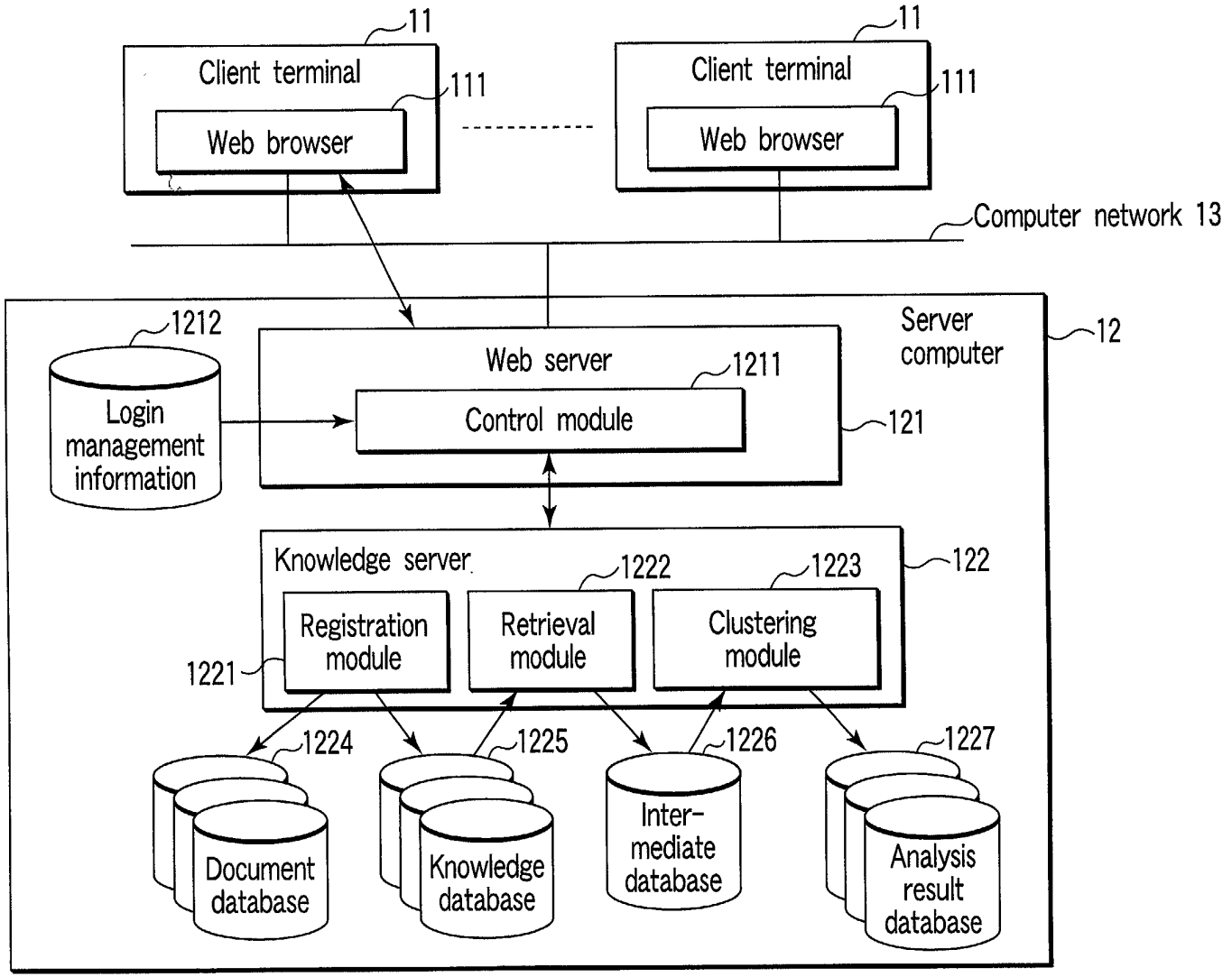

11
Client terminal
111
Web browser
11
Client terminal
111
Web browser
Computer network 13
Server computer
12
1212
Login management information
Web server
1211
Control module
121
Knowledge server
1222
1223
122
Registration module
Retrieval module
Clustering module
1221
1224
1225
1226
1227
Document database
Knowledge database
Inter-mediate database
Analysis result database

FIG. 1

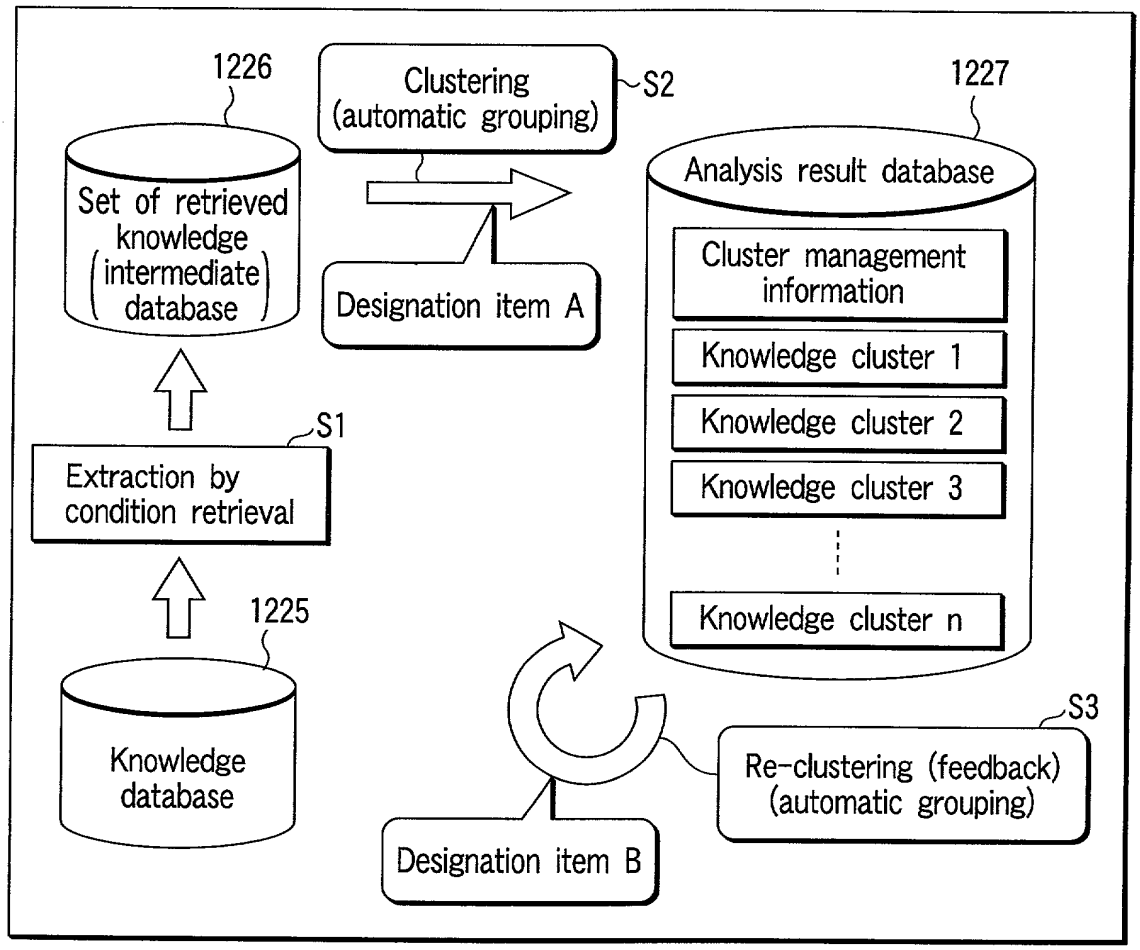

1226
Clustering
(automatic grouping)
S2
1227
Set of retrieved
knowledge
(intermediate)
database
Designation item A
Analysis result database
Cluster management
information
Knowledge cluster 1
Knowledge cluster 2
Knowledge cluster 3
Knowledge cluster n
S1
Extraction by
condition retrieval
1225
Knowledge
database
S3
Re-clustering (feedback)
(automatic grouping)
Designation item B

FIG. 2

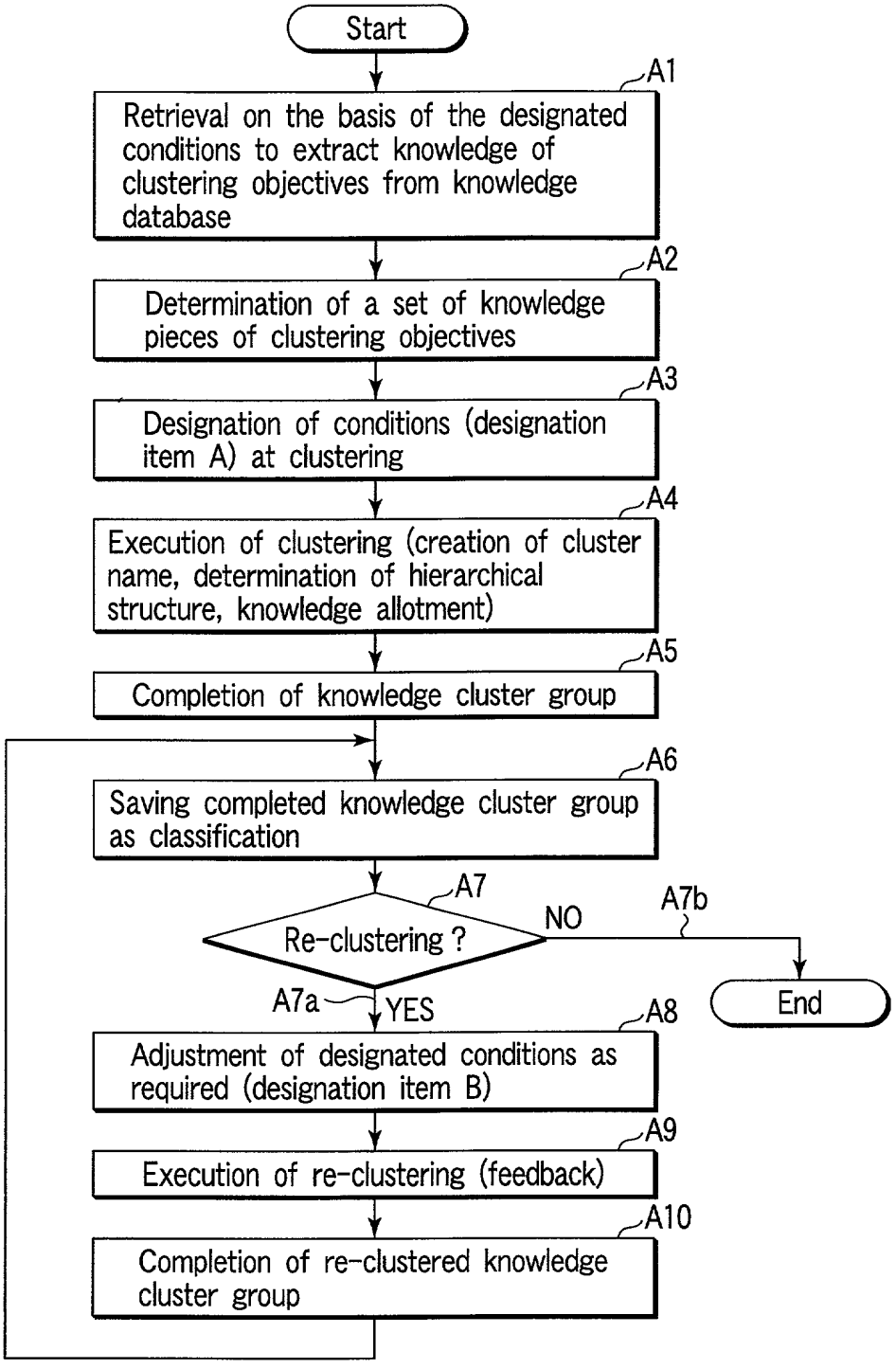

Start
A1
Retrieval on the basis of the designated conditions to extract knowledge of clustering objectives from knowledge database
A2
Determination of a set of knowledge pieces of clustering objectives
A3
Designation of conditions (designation item A) at clustering
A4
Execution of clustering (creation of cluster name, determination of hierarchical structure, knowledge allotment)
A5
Completion of knowledge cluster group
A6
Saving completed knowledge cluster group as classification
A7
Re-clustering ?
NO
A7b
End
A7a
YES
A8
Adjustment of designated conditions as required (designation item B)
A9
Execution of re-clustering (feedback)
A10
Completion of re-clustered knowledge cluster group

FIG. 3

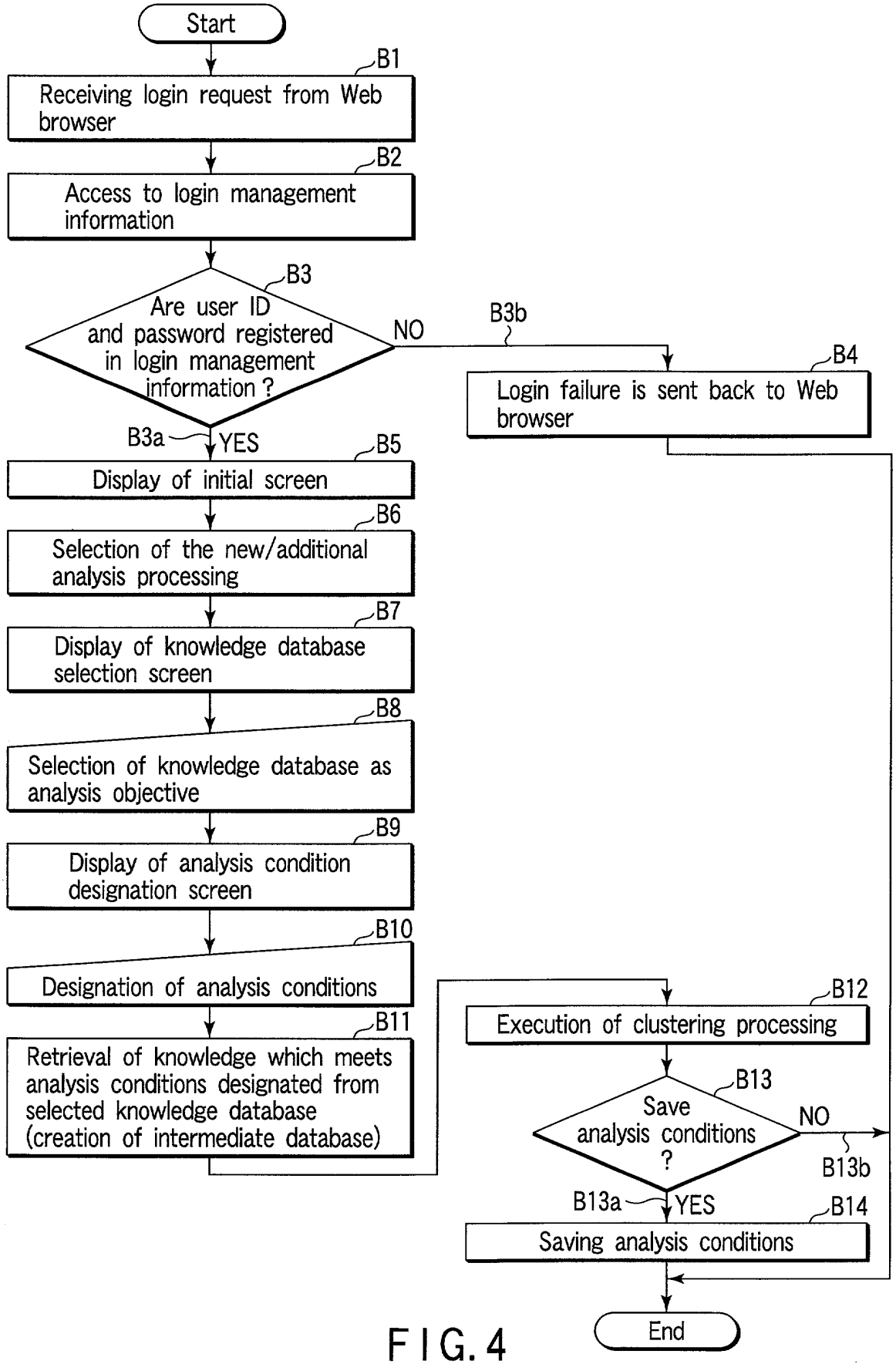

Start
B1
Receiving login request from Web browser
B2
Access to login management information
B3
Are user ID and password registered in login management information ?
NO
B3b
B4
Login failure is sent back to Web browser
B3a
YES
B5
Display of initial screen
B6
Selection of the new/additional analysis processing
B7
Display of knowledge database selection screen
B8
Selection of knowledge database as analysis objective
B9
Display of analysis condition designation screen
B10
Designation of analysis conditions
B11
Retrieval of knowledge which meets analysis conditions designated from selected knowledge database (creation of intermediate database)
B12
Execution of clustering processing
B13
Save analysis conditions ?
NO
B13b
B13a
YES
B14
Saving analysis conditions
End

FIG. 4

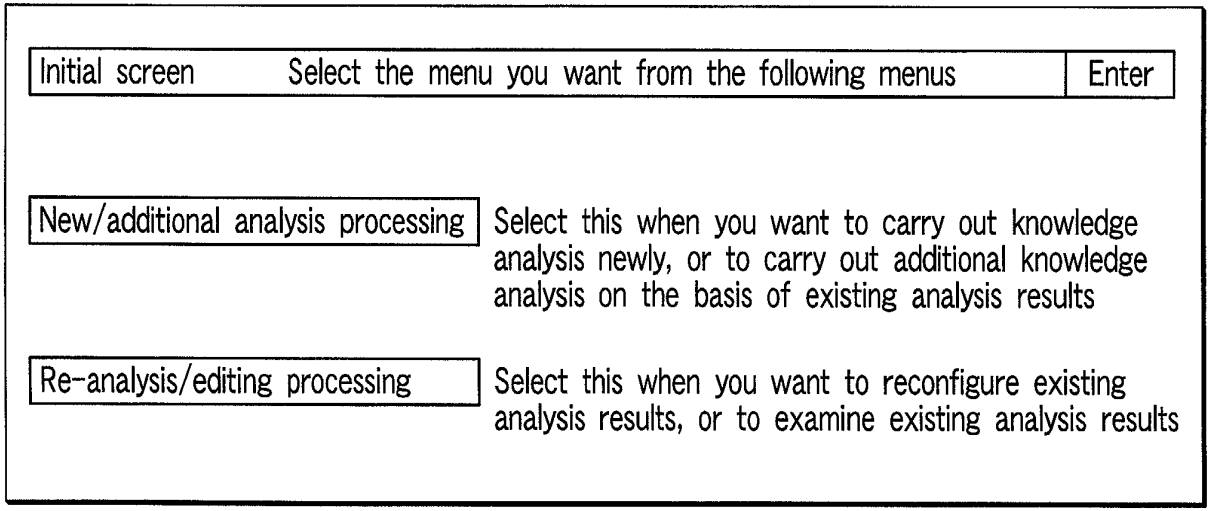

Initial screen
Select the menu you want from the following menus
Enter
New/additional analysis processing
Select this when you want to carry out knowledge analysis newly, or to carry out additional knowledge analysis on the basis of existing analysis results
Re-analysis/editing processing
Select this when you want to reconfigure existing analysis results, or to examine existing analysis results

FIG. 5

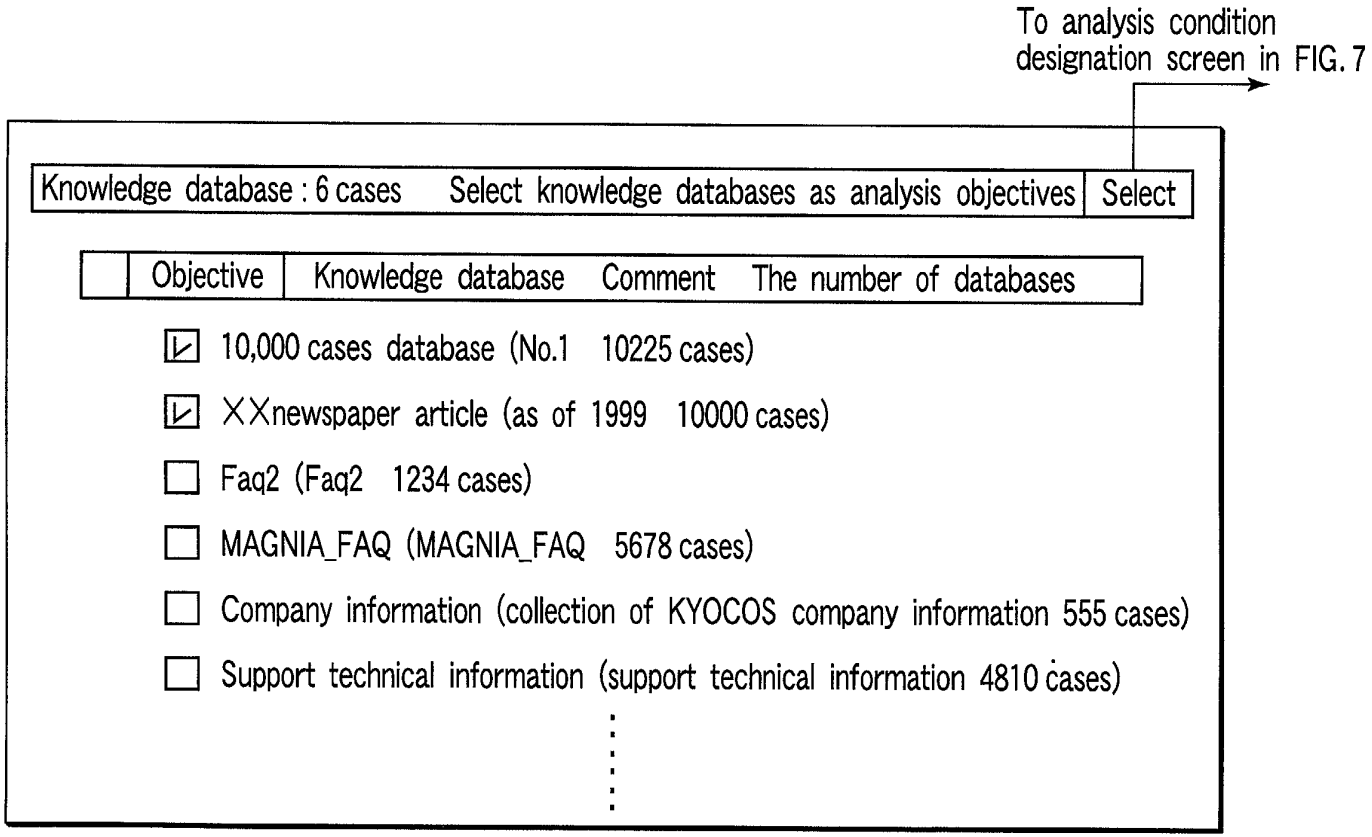

To analysis condition designation screen in FIG. 7
Knowledge database : 6 cases
Select knowledge databases as analysis objectives
Select
Objective
Knowledge database
Comment
The number of databases
10,000 cases database (No.1 10225 cases)
XXnewspaper article (as of 1999 10000 cases)
Faq2 (Faq2 1234 cases)
MAGNIA_FAQ (MAGNIA_FAQ 5678 cases)
Company information (collection of KYOCOS company information 555 cases)
Support technical information (support technical information 4810 cases)

FIG. 6

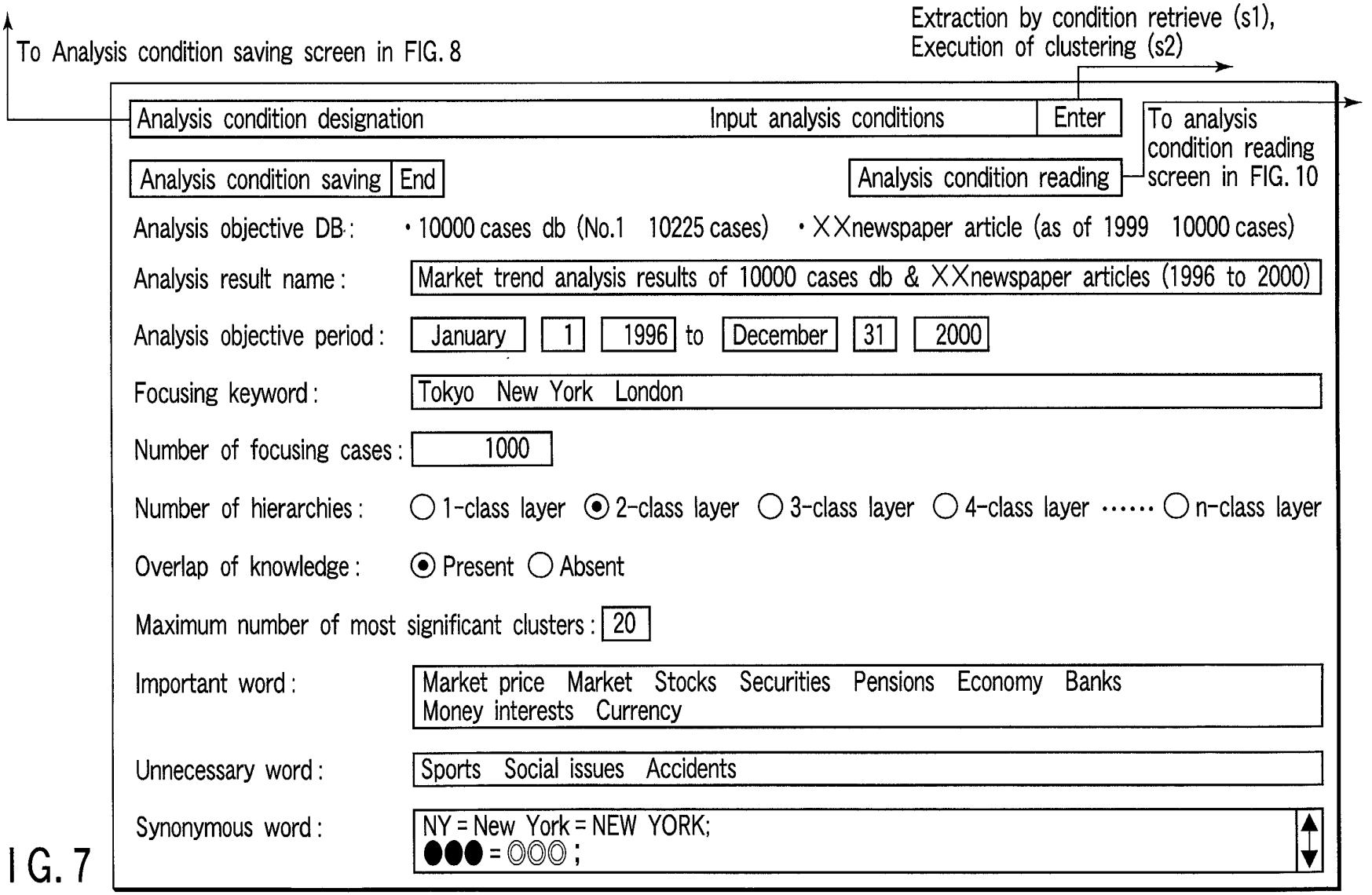

To Analysis condition saving screen in FIG. 8
Extraction by condition retrieve (s1),
Execution of clustering (s2)
Analysis condition designation
Input analysis conditions
Enter
To analysis condition reading screen in FIG. 10
Analysis condition saving
End
Analysis condition reading
Analysis objective DB :
• 10000 cases db (No.1 10225 cases)
• XXnewspaper article (as of 1999 10000 cases)
Analysis result name :
Market trend analysis results of 10000 cases db & XXnewspaper articles (1996 to 2000)
Analysis objective period :
January
1
1996
to
December
31
2000
Focusing keyword :
Tokyo New York London
Number of focusing cases :
1000
Number of hierarchies :
1-class layer
2-class layer
3-class layer
4-class layer ·····
n-class layer
Overlap of knowledge :
Present
Absent
Maximum number of most significant clusters :
20
Important word :
Market price Market Stocks Securities Pensions Economy Banks
Money interests Currency
Unnecessary word :
Sports Social issues Accidents
Synonymous word :
NY = New York = NEW YORK;
●●● = ◎◎◎ ;

FIG. 7

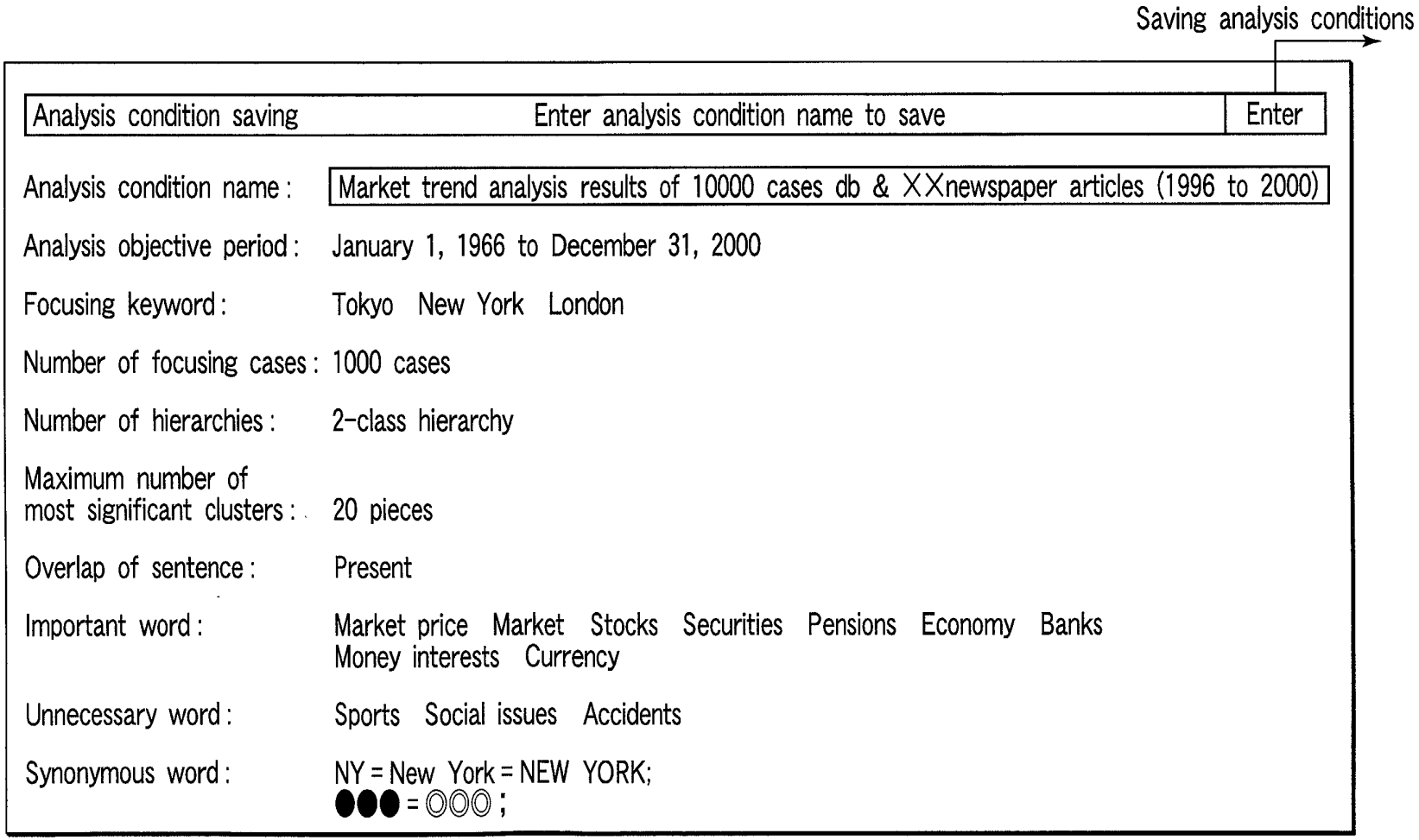

Saving analysis conditions
Analysis condition saving
Enter analysis condition name to save
Enter
Analysis condition name :
Market trend analysis results of 10000 cases db & XXnewspaper articles (1996 to 2000)
Analysis objective period :
January 1, 1966 to December 31, 2000
Focusing keyword :
Tokyo New York London
Number of focusing cases :
1000 cases
Number of hierarchies :
2-class hierarchy
Maximum number of most significant clusters :
20 pieces
Overlap of sentence :
Present
Important word :
Market price Market Stocks Securities Pensions Economy Banks Money interests Currency
Unnecessary word :
Sports Social issues Accidents
Synonymous word :
NY = New York = NEW YORK;
●●● = ◎◎◎ ;

FIG. 8

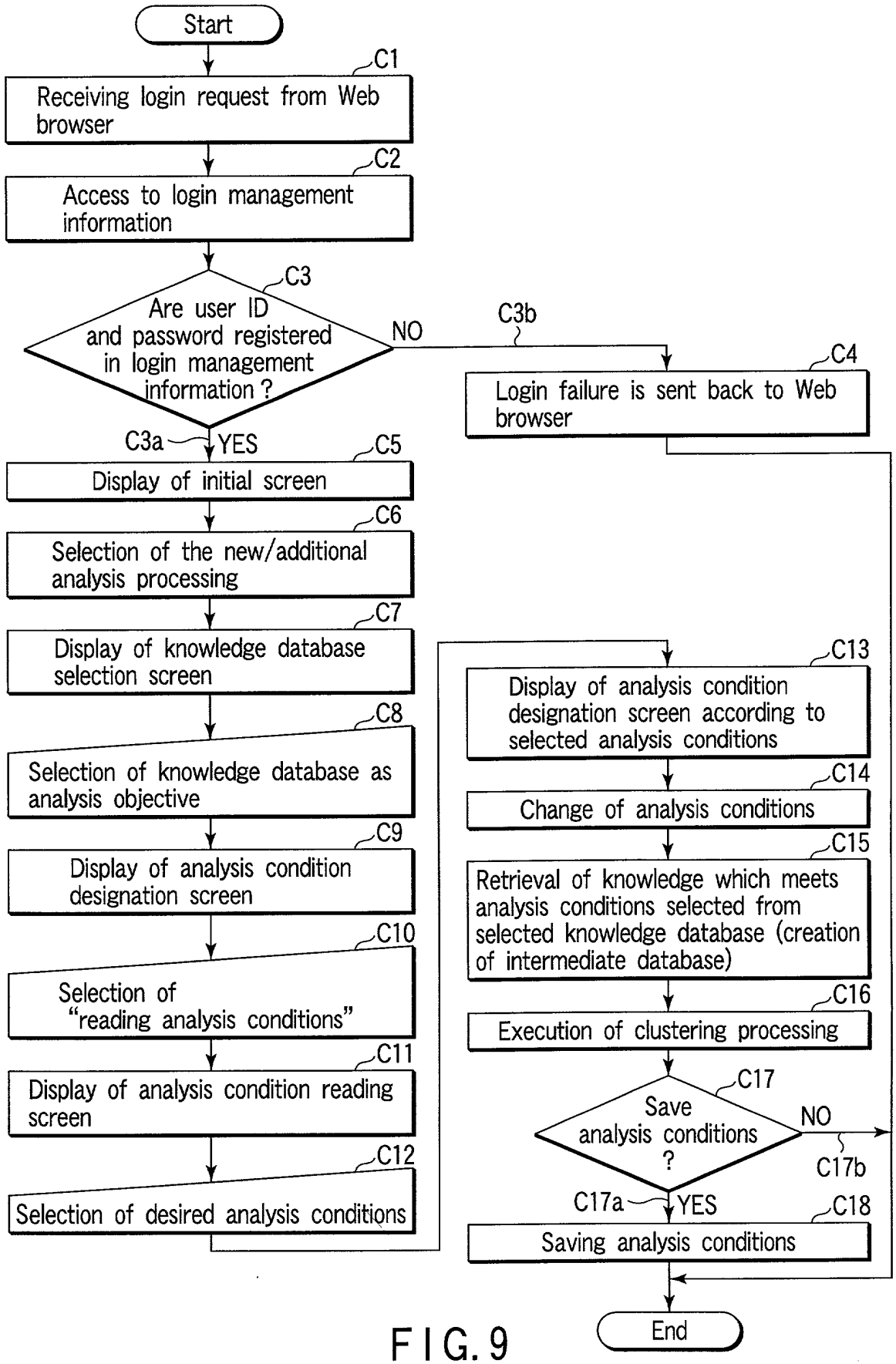

Start
C1
Receiving login request from Web browser
C2
Access to login management information
C3
Are user ID and password registered in login management information ?
NO
C3b
C4
Login failure is sent back to Web browser
C3a
YES
C5
Display of initial screen
C6
Selection of the new/additional analysis processing
C7
Display of knowledge database selection screen
C8
Selection of knowledge database as analysis objective
C9
Display of analysis condition designation screen
C10
Selection of "reading analysis conditions"
C11
Display of analysis condition reading screen
C12
Selection of desired analysis conditions
C13
Display of analysis condition designation screen according to selected analysis conditions
C14
Change of analysis conditions
C15
Retrieval of knowledge which meets analysis conditions selected from selected knowledge database (creation of intermediate database)
C16
Execution of clustering processing
C17
Save analysis conditions ?
NO
C17b
C17a
YES
C18
Saving analysis conditions
End

FIG. 9

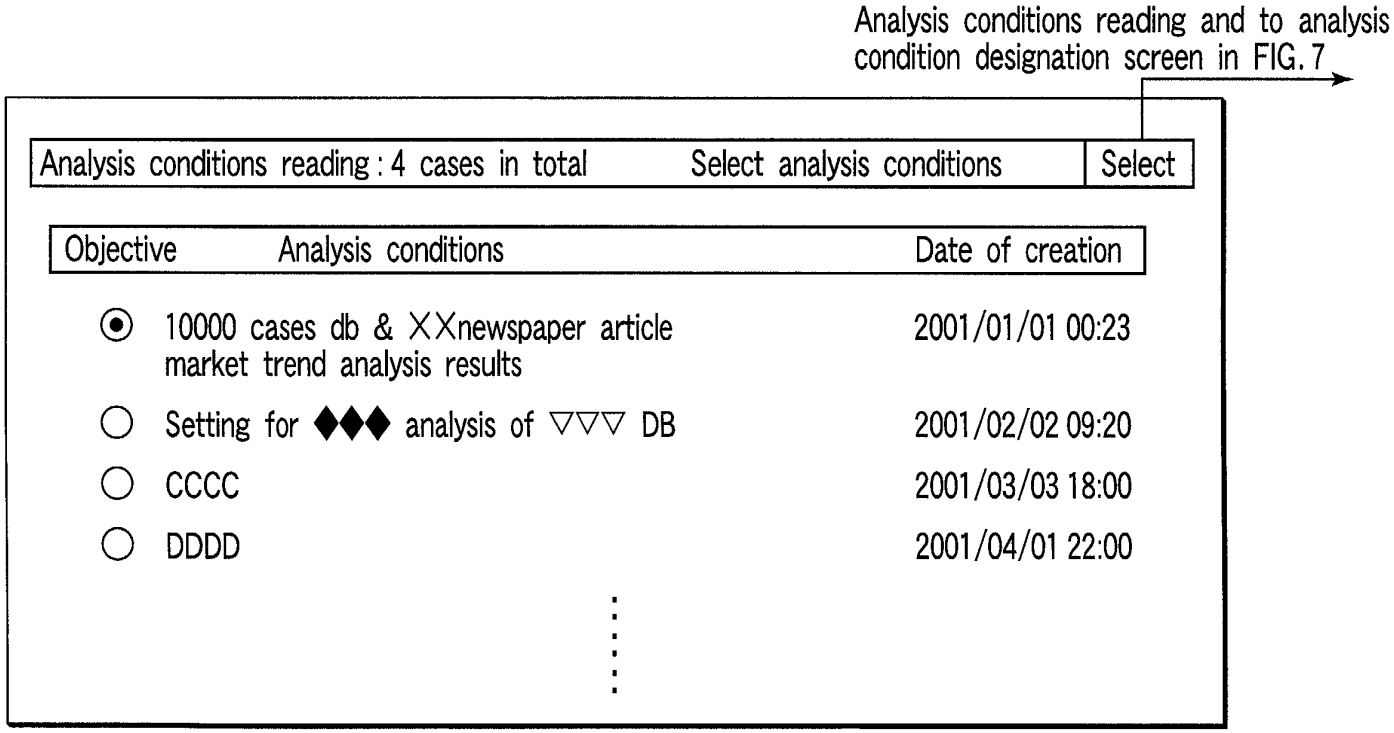
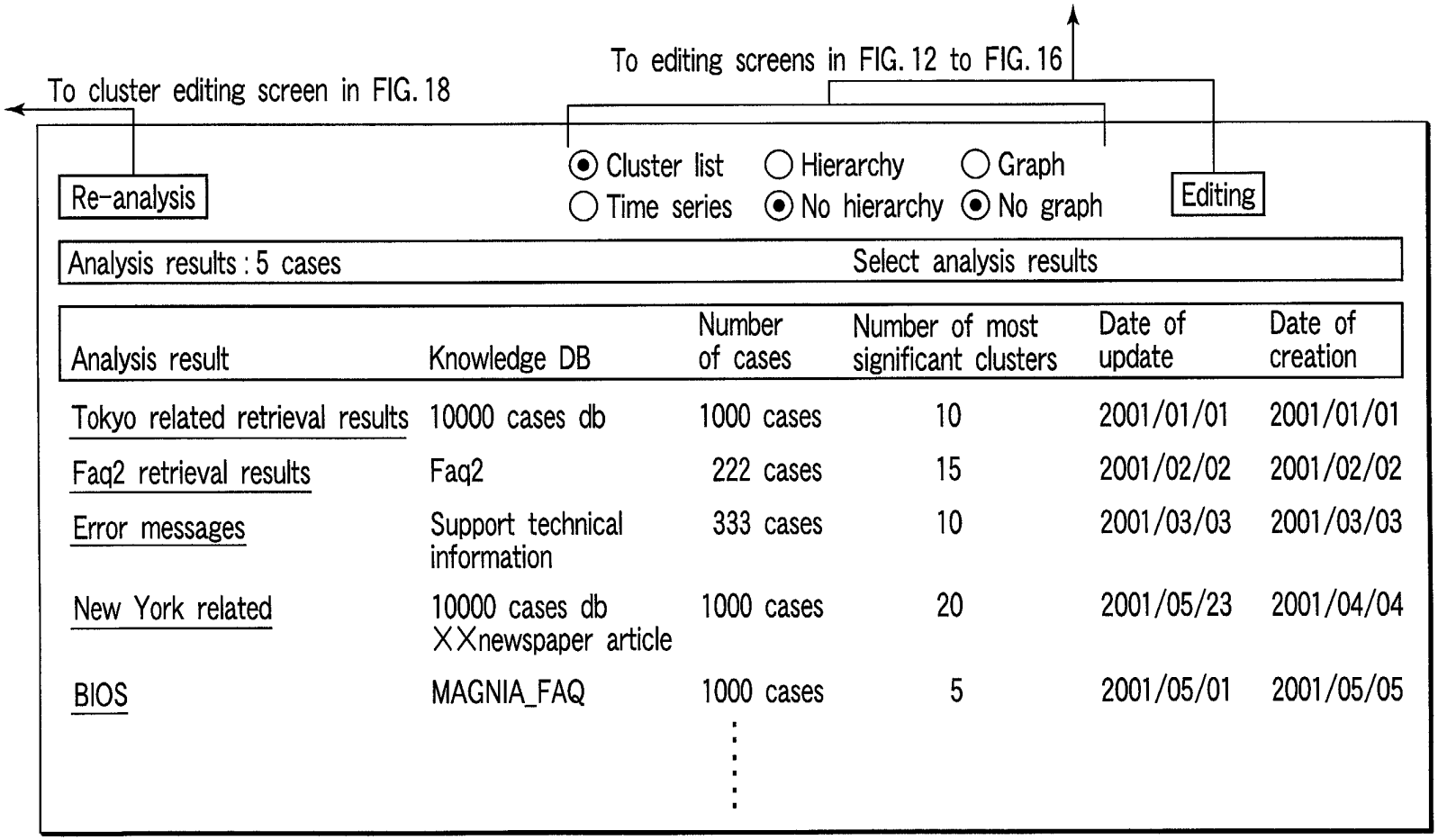

Analysis conditions reading and to analysis condition designation screen in FIG. 7
Analysis conditions reading : 4 cases in total
Select analysis conditions
Select
Objective
Analysis conditions
Date of creation
10000 cases db & XXnewspaper article market trend analysis results
2001/01/01 00:23
Setting for ◆◆◆ analysis of ▽▽▽ DB
2001/02/02 09:20
CCCC
2001/03/03 18:00
DDDD
2001/04/01 22:00

FIG. 10



Analysis result	Knowledge DB	Number of cases	Number of most significant clusters	Date of update	Date of creation
Tokyo related retrieval results	10000 cases db	1000 cases	10	2001/01/01	2001/01/01
Faq2 retrieval results	Faq2	222 cases	15	2001/02/02	2001/02/02
Error messages	Support technical information	333 cases	10	2001/03/03	2001/03/03
New York related	10000 cases db XXnewspaper article	1000 cases	20	2001/05/23	2001/04/04
BIOS	MAGNIA_FAQ	1000 cases	5	2001/05/01	2001/05/05

FIG. 11

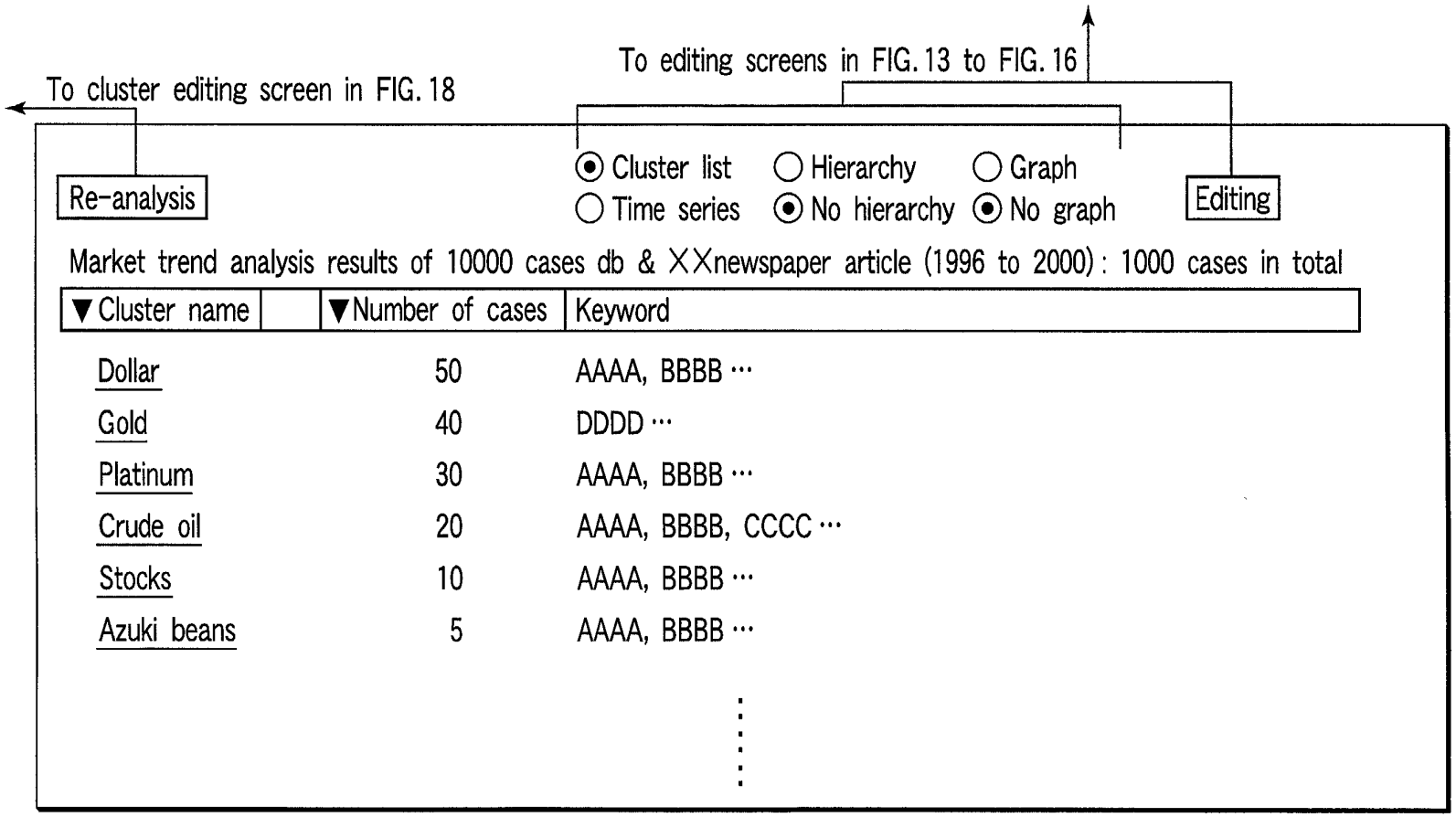

To editing screens in FIG. 13 to FIG. 16
To cluster editing screen in FIG. 18
Re-analysis
Cluster list
Hierarchy
Graph
Time series
No hierarchy
No graph
Editing
Market trend analysis results of 10000 cases db & XXnewspaper article (1996 to 2000) : 1000 cases in total
▼Cluster name
▼Number of cases
Keyword
Dollar 50 AAAA, BBBB ···
Gold 40 DDDD ···
Platinum 30 AAAA, BBBB ···
Crude oil 20 AAAA, BBBB, CCCC ···
Stocks 10 AAAA, BBBB ···
Azuki beans 5 AAAA, BBBB ···

FIG. 12

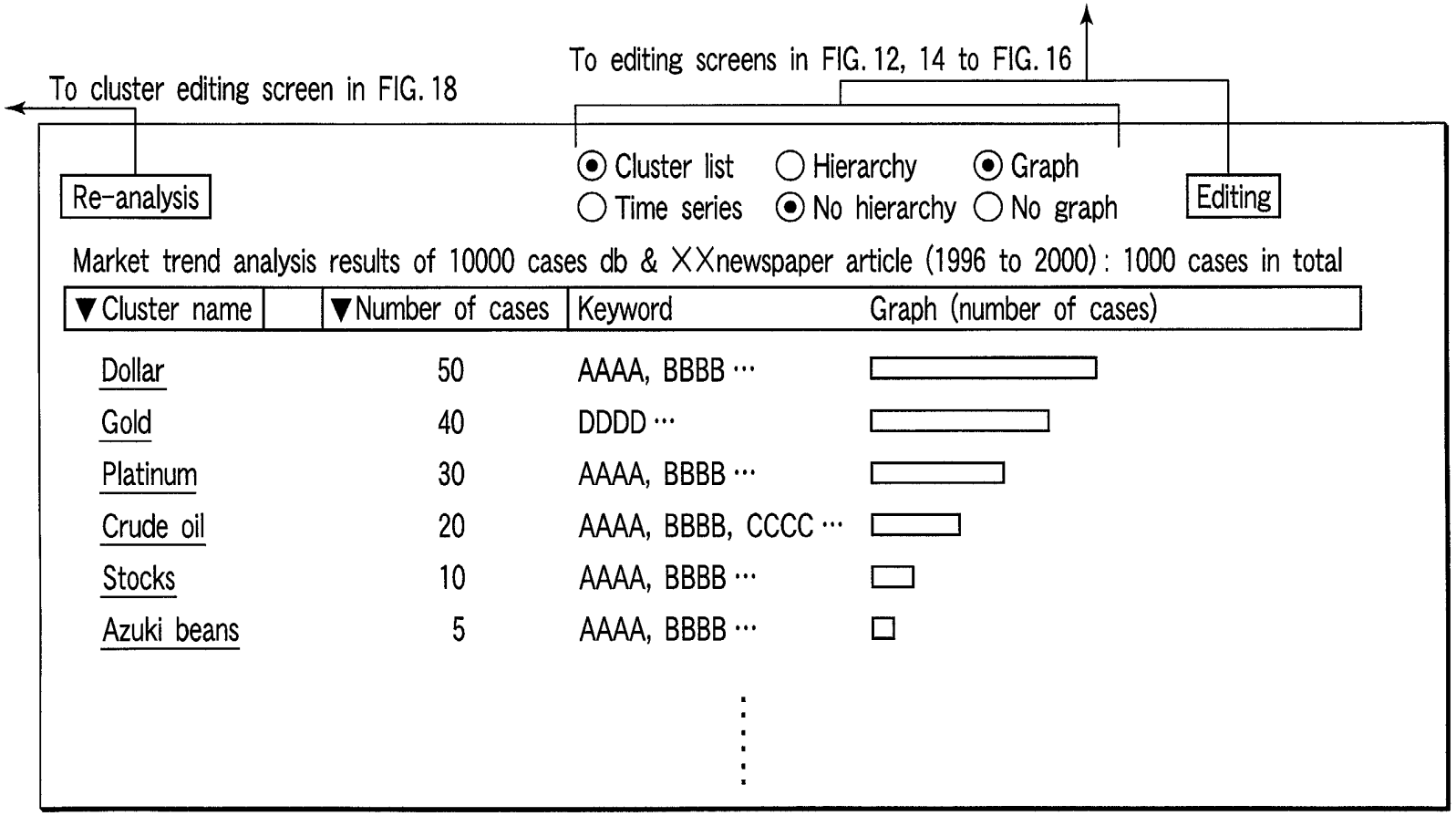

To editing screens in FIG. 12, 14 to FIG. 16
To cluster editing screen in FIG. 18
Re-analysis
Cluster list
Hierarchy
Graph
Time series
No hierarchy
No graph
Editing
Market trend analysis results of 10000 cases db & XXnewspaper article (1996 to 2000) : 1000 cases in total
▼Cluster name
▼Number of cases
Keyword
Graph (number of cases)
Dollar 50 AAAA, BBBB ···
Gold 40 DDDD ···
Platinum 30 AAAA, BBBB ···
Crude oil 20 AAAA, BBBB, CCCC ···
Stocks 10 AAAA, BBBB ···
Azuki beans 5 AAAA, BBBB ···

FIG. 13

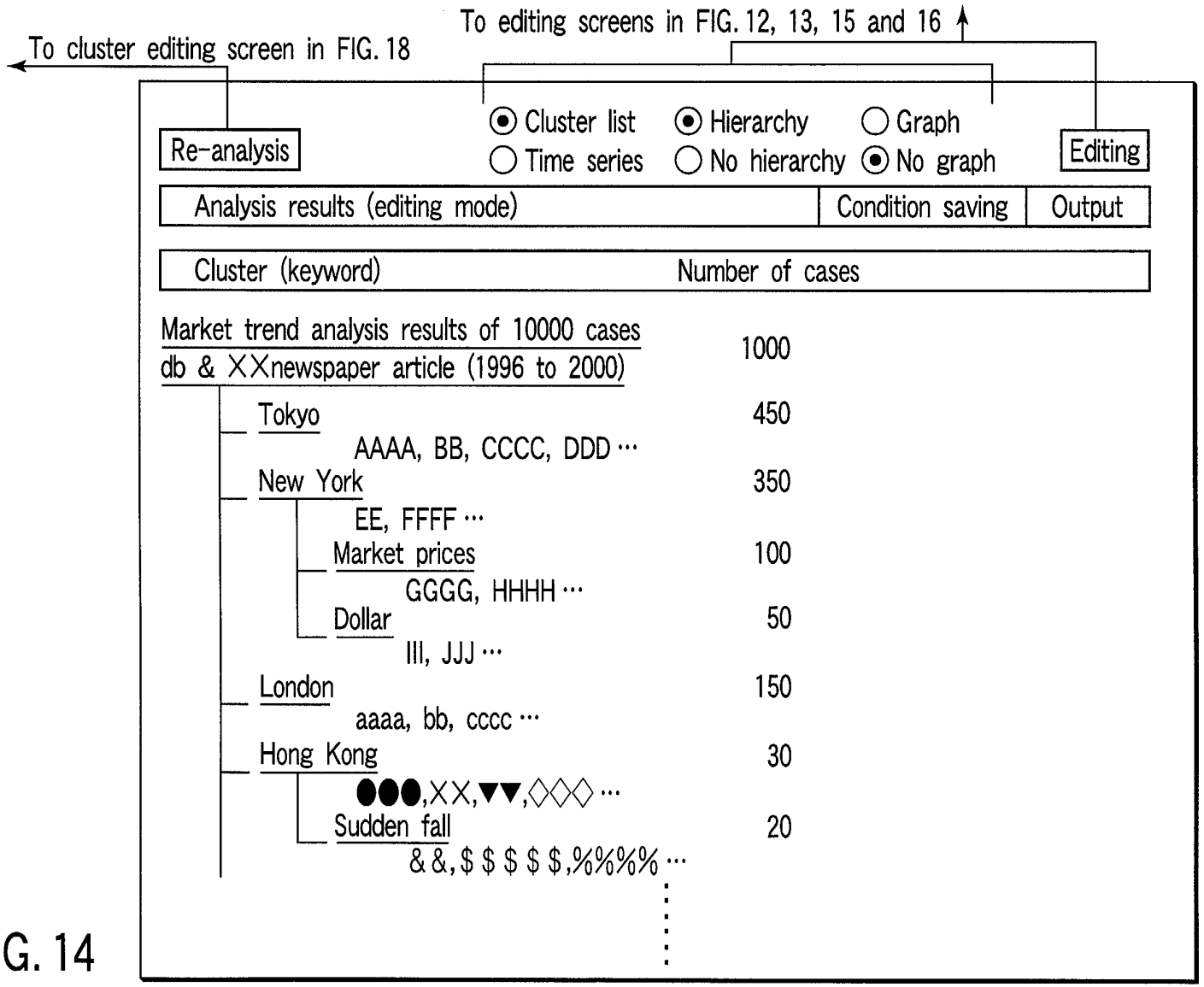

To editing screens in FIG. 12, 13, 15 and 16
To cluster editing screen in FIG. 18
Re-analysis
Cluster list
Hierarchy
Graph
Time series
No hierarchy
No graph
Editing
Analysis results (editing mode)
Condition saving
Output
Cluster (keyword)
Number of cases
Market trend analysis results of 10000 cases db & XXnewspaper article (1996 to 2000)
1000
Tokyo
450
AAAA, BB, CCCC, DDD ···
New York
350
EE, FFFF ···
Market prices
100
GGGG, HHHH ···
Dollar
50
III, JJJ ···
London
150
aaaa, bb, cccc ···
Hong Kong
30
●●●,XX,▼▼,◇◇◇ ···
Sudden fall
20
&&,$$$$$,%%%% ···

FIG. 14

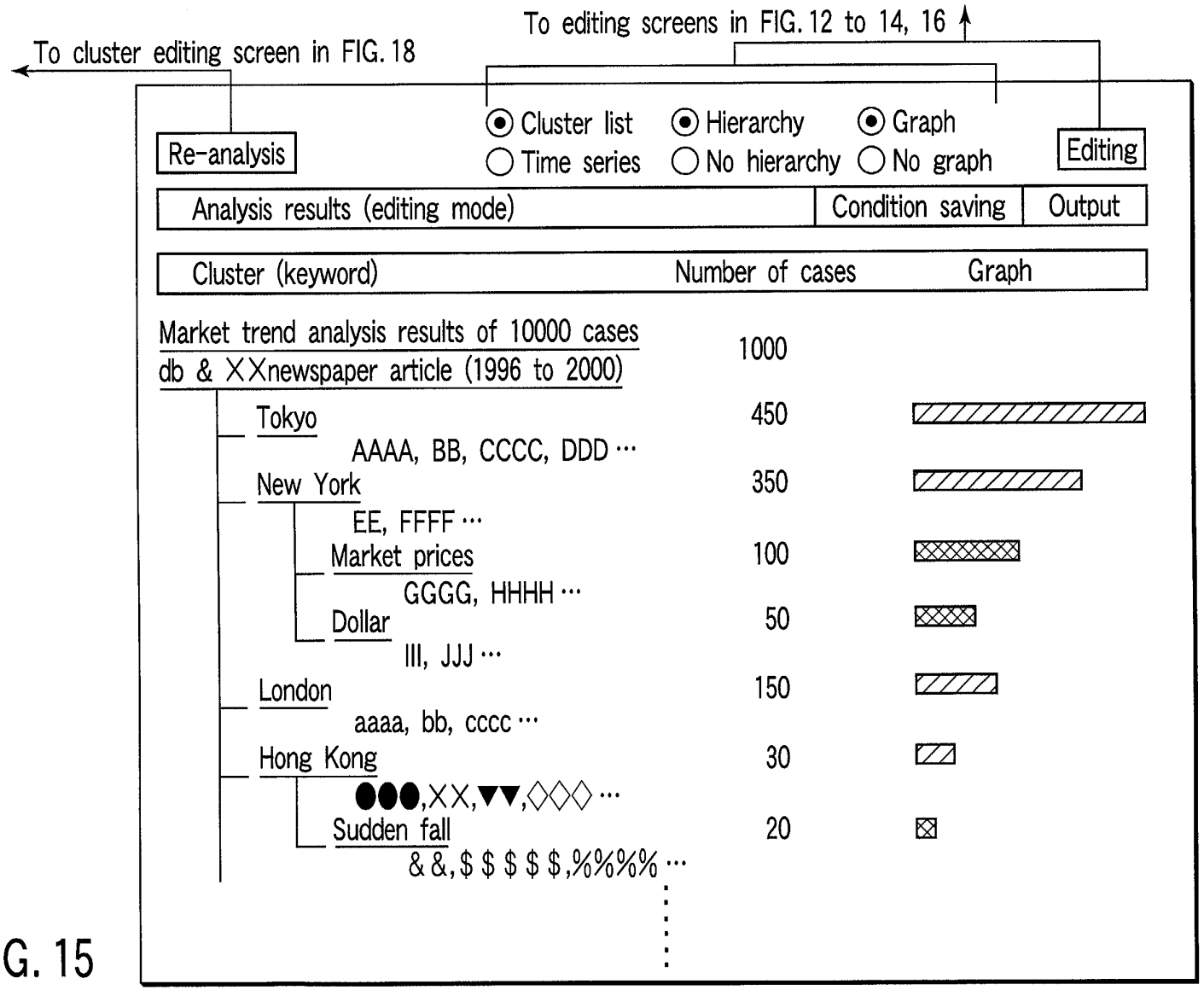

To editing screens in FIG. 12 to 14, 16
To cluster editing screen in FIG. 18
Re-analysis
Cluster list
Hierarchy
Graph
Time series
No hierarchy
No graph
Editing
Analysis results (editing mode)
Condition saving
Output
Cluster (keyword)
Number of cases
Graph
Market trend analysis results of 10000 cases
db & XXnewspaper article (1996 to 2000)
1000
Tokyo
450
AAAA, BB, CCCC, DDD ···
New York
350
EE, FFFF ···
Market prices
100
GGGG, HHHH ···
Dollar
50
III, JJJ ···
London
150
aaaa, bb, cccc ···
Hong Kong
30
●●●,XX,▼▼,◇◇◇ ···
Sudden fall
20
&&,$$$$$,%%%% ···

FIG. 15

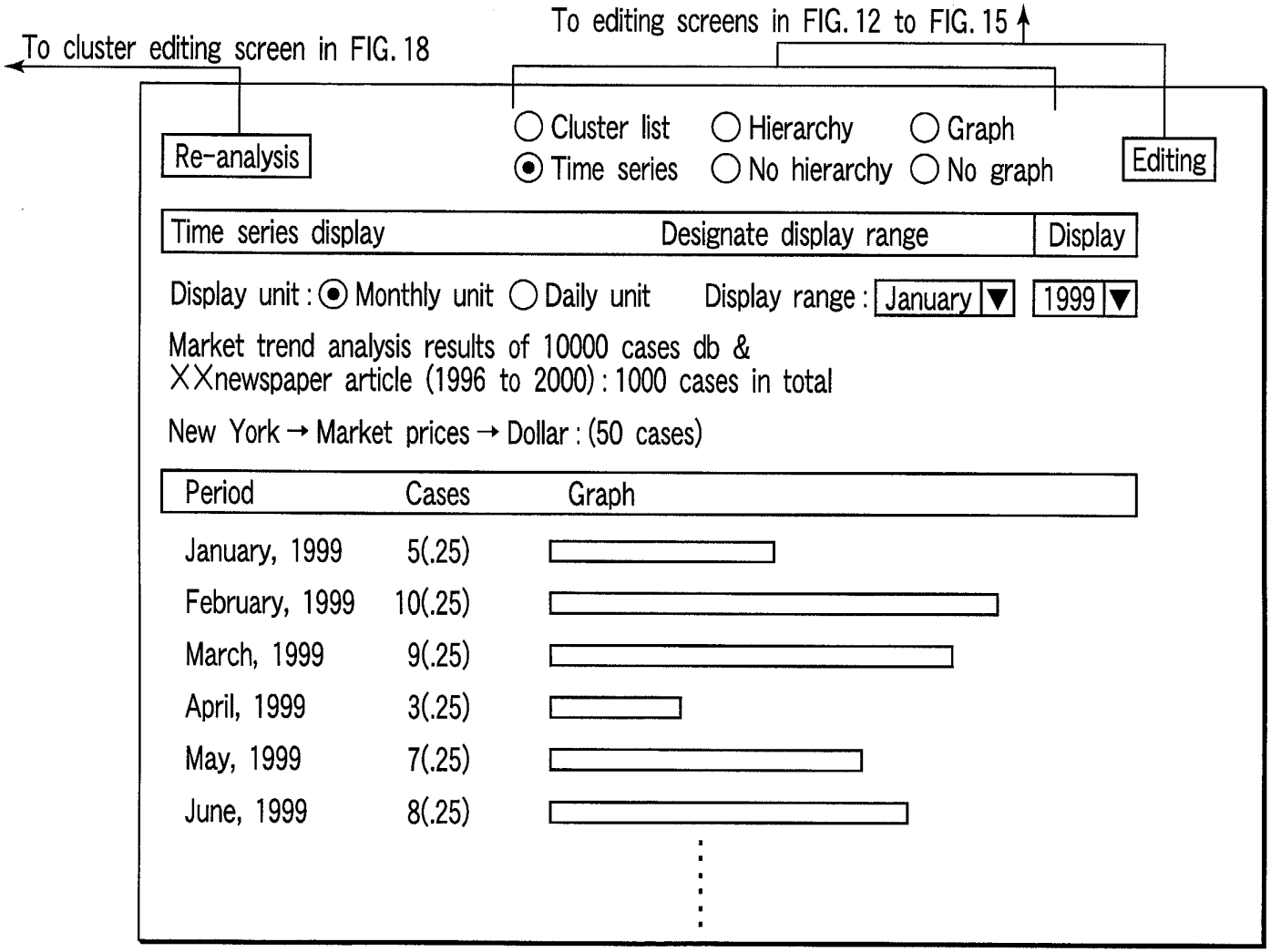

To editing screens in FIG. 12 to FIG. 15
To cluster editing screen in FIG. 18
Re-analysis
Cluster list
Hierarchy
Graph
Time series
No hierarchy
No graph
Editing
Time series display
Designate display range
Display
Display unit : Monthly unit
Daily unit
Display range : January
1999
Market trend analysis results of 10000 cases db &
XXnewspaper article (1996 to 2000) : 1000 cases in total
New York → Market prices → Dollar : (50 cases)
Period
Cases
Graph
January, 1999
5(.25)
February, 1999
10(.25)
March, 1999
9(.25)
April, 1999
3(.25)
May, 1999
7(.25)
June, 1999
8(.25)

FIG. 16

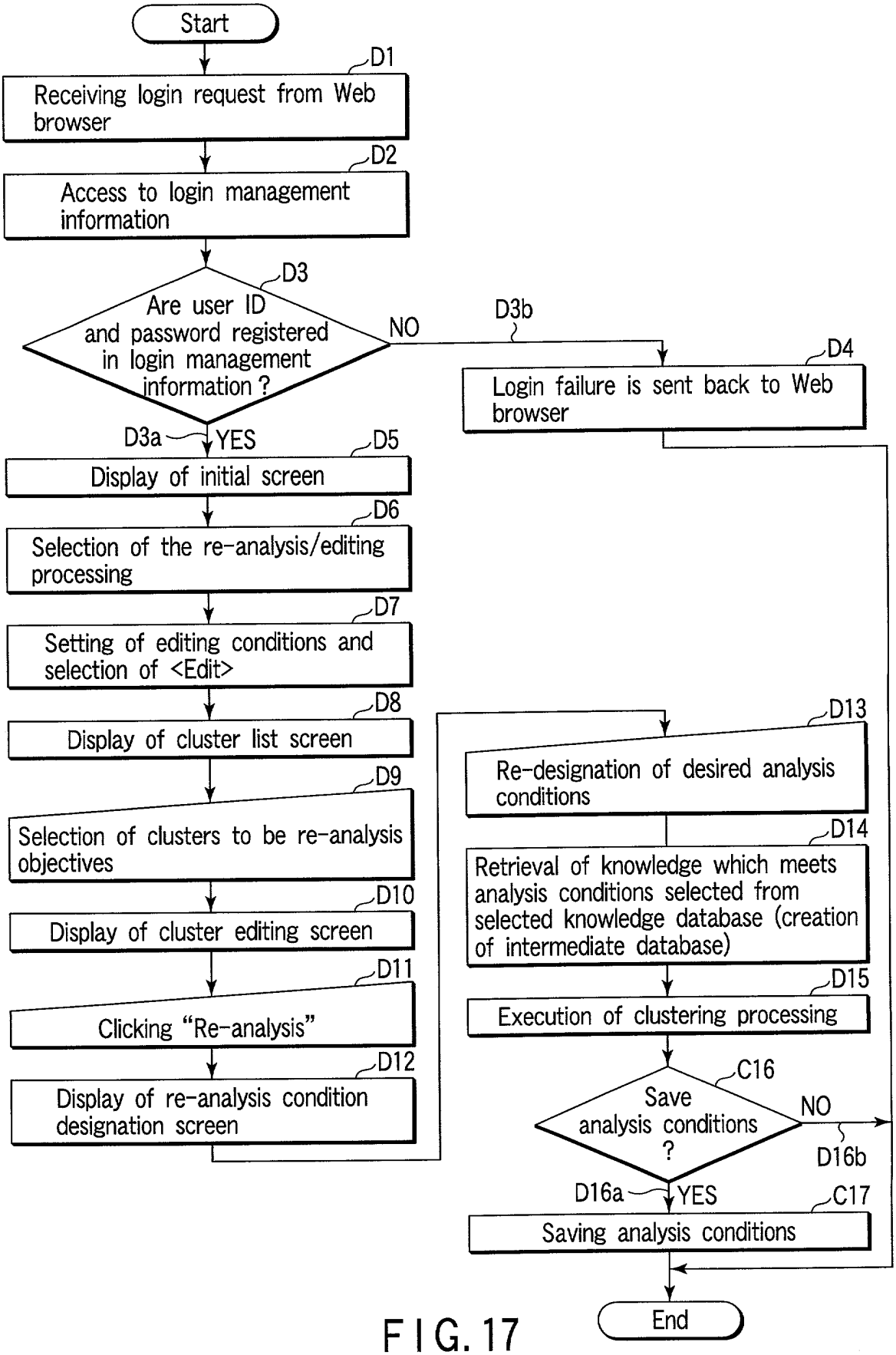

Start
D1
Receiving login request from Web browser
D2
Access to login management information
D3
Are user ID and password registered in login management information ?
NO
D3b
D4
Login failure is sent back to Web browser
D3a
YES
D5
Display of initial screen
D6
Selection of the re-analysis/editing processing
D7
Setting of editing conditions and selection of <Edit>
D8
Display of cluster list screen
D9
Selection of clusters to be re-analysis objectives
D10
Display of cluster editing screen
D11
Clicking "Re-analysis"
D12
Display of re-analysis condition designation screen
D13
Re-designation of desired analysis conditions
D14
Retrieval of knowledge which meets analysis conditions selected from selected knowledge database (creation of intermediate database)
D15
Execution of clustering processing
C16
Save analysis conditions ?
NO
D16b
D16a
YES
C17
Saving analysis conditions
End

FIG. 17

20220 EP95E80DE

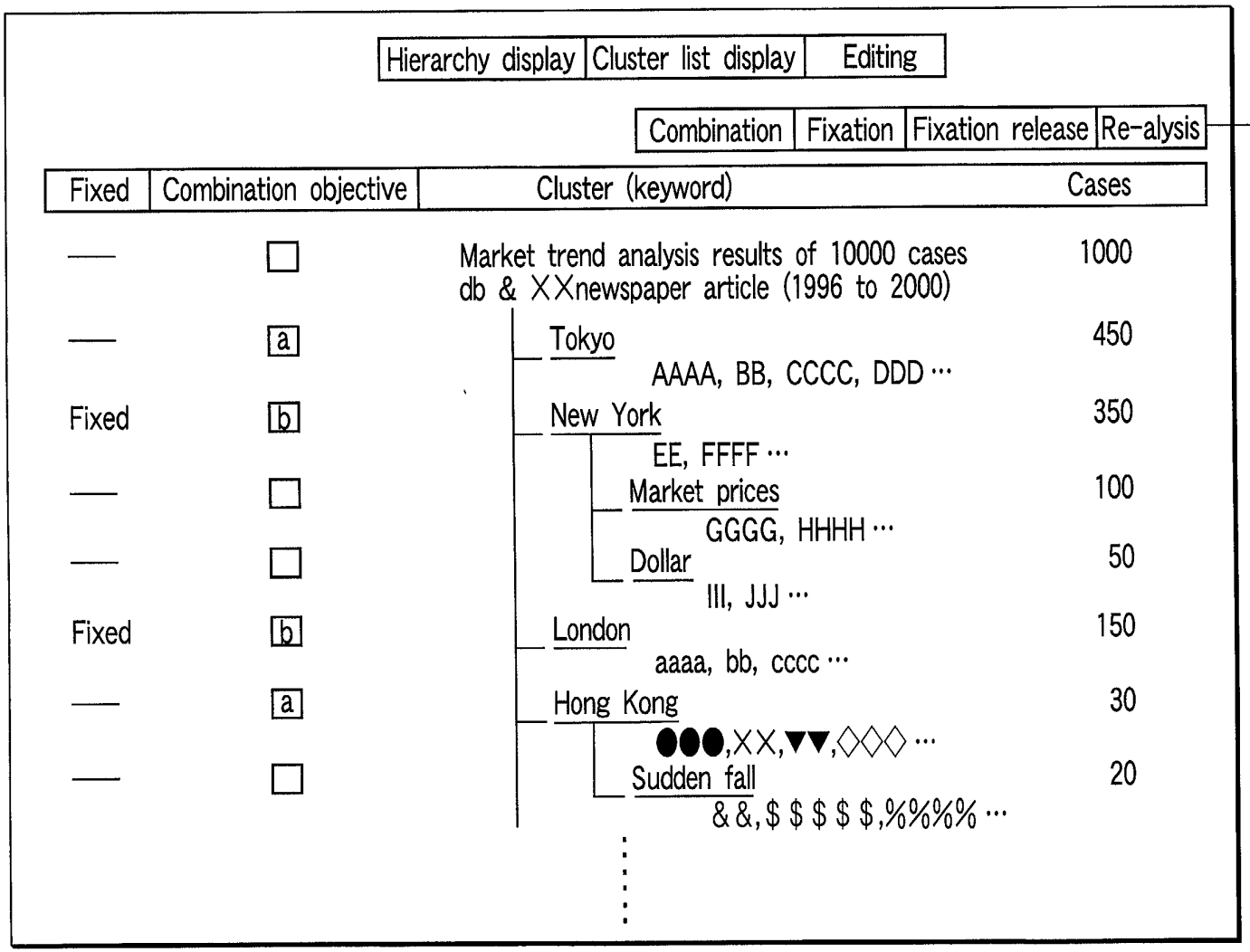


FIG. 18

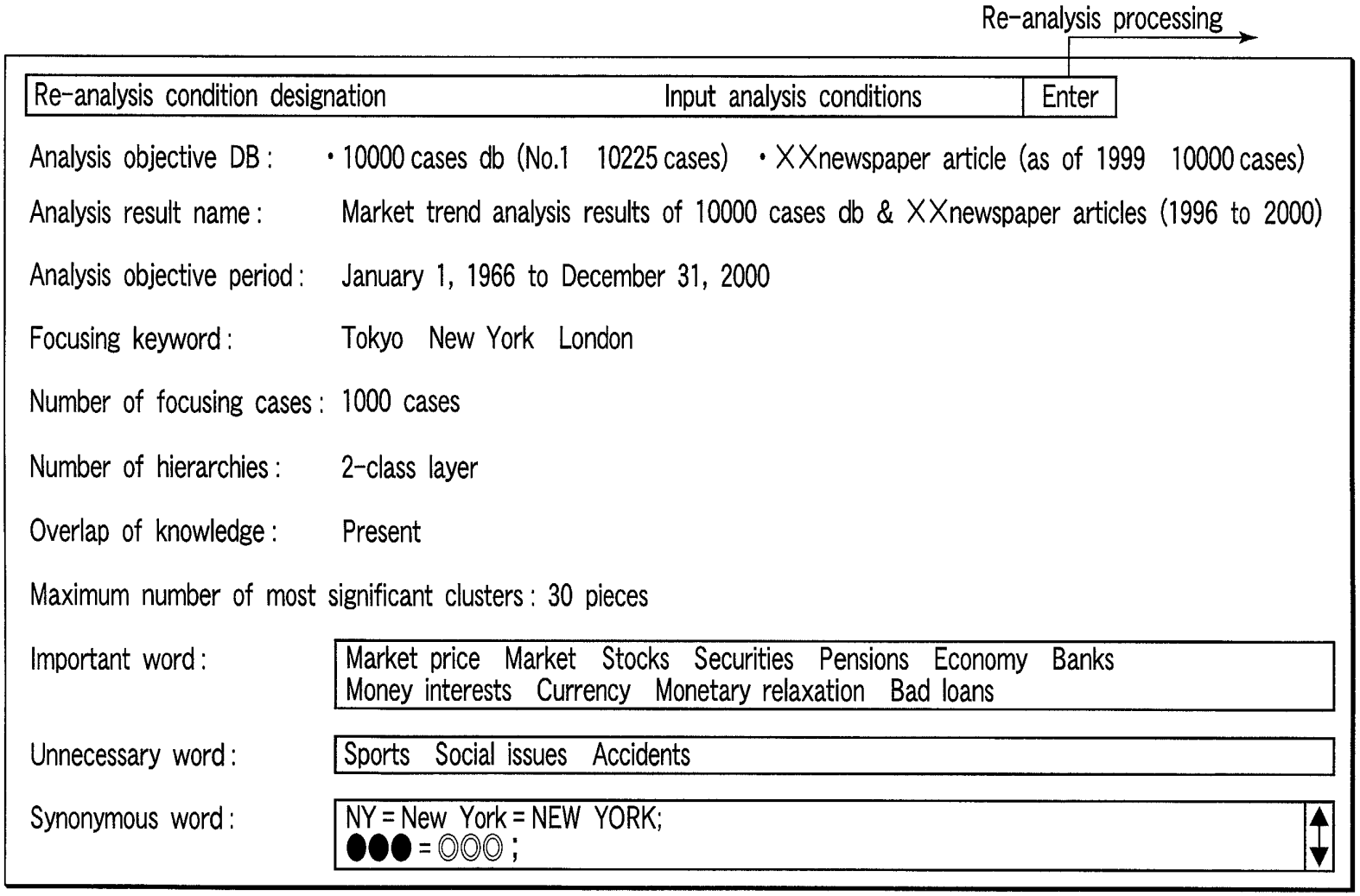
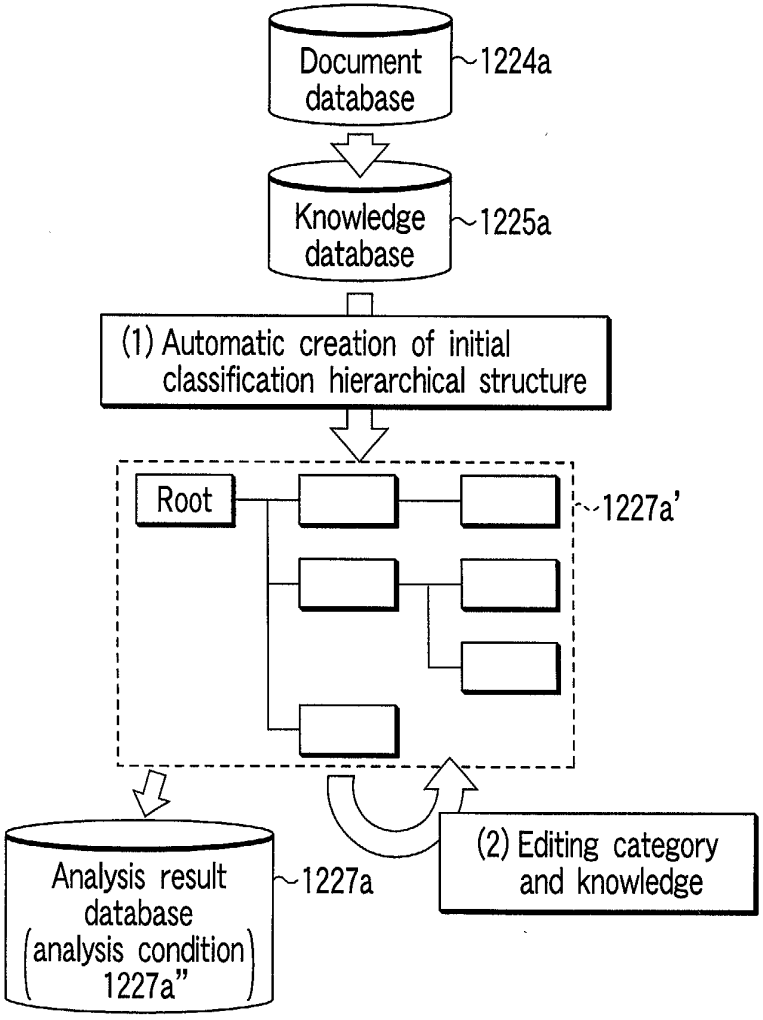

Re-analysis processing
Re-analysis condition designation
Input analysis conditions
Enter
Analysis objective DB : • 10000 cases db (No.1 10225 cases) • XXnewspaper article (as of 1999 10000 cases)
Analysis result name : Market trend analysis results of 10000 cases db & XXnewspaper articles (1996 to 2000)
Analysis objective period : January 1, 1966 to December 31, 2000
Focusing keyword : Tokyo New York London
Number of focusing cases : 1000 cases
Number of hierarchies : 2-class layer
Overlap of knowledge : Present
Maximum number of most significant clusters : 30 pieces
Important word : Market price Market Stocks Securities Pensions Economy Banks Money interests Currency Monetary relaxation Bad loans
Unnecessary word : Sports Social issues Accidents
Synonymous word : NY = New York = NEW YORK;
●●● = ◎◎◎ ;

FIG. 19



(A) Operation at introduction

FIG. 20A

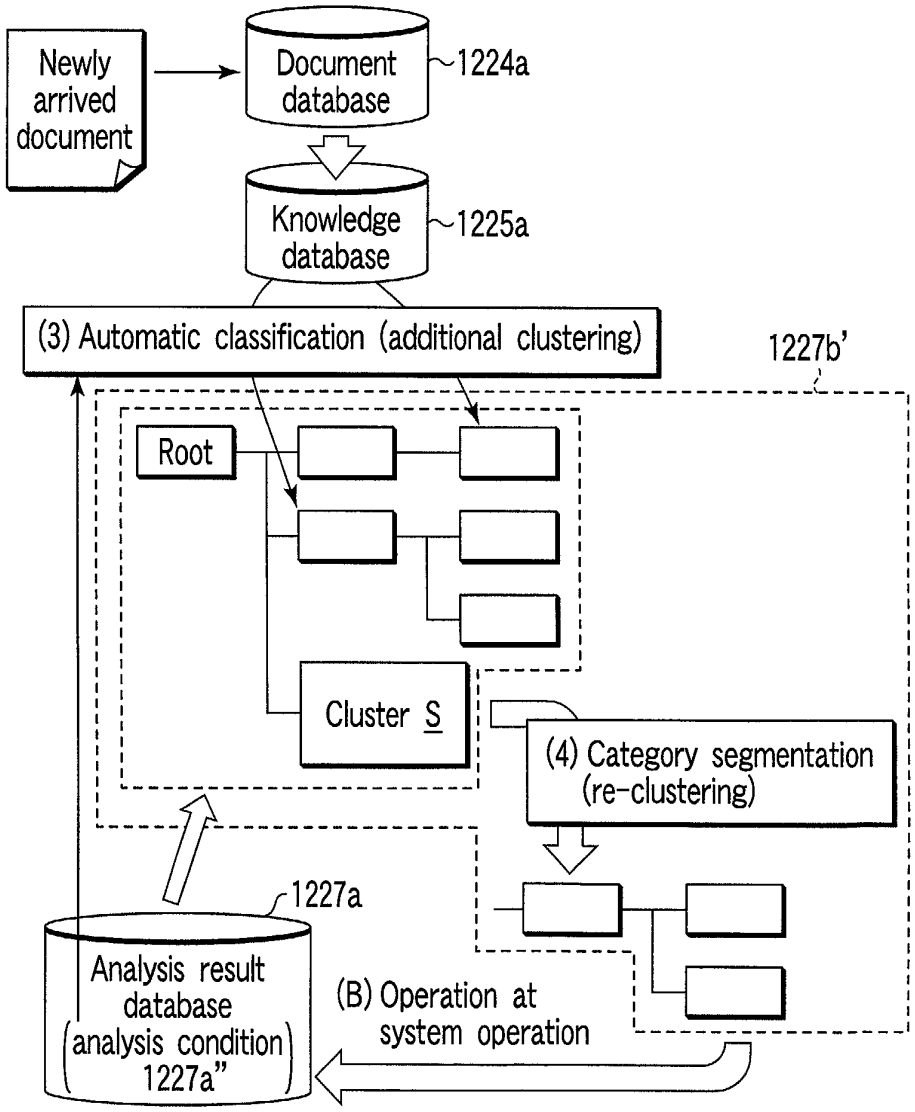


FIG. 20B

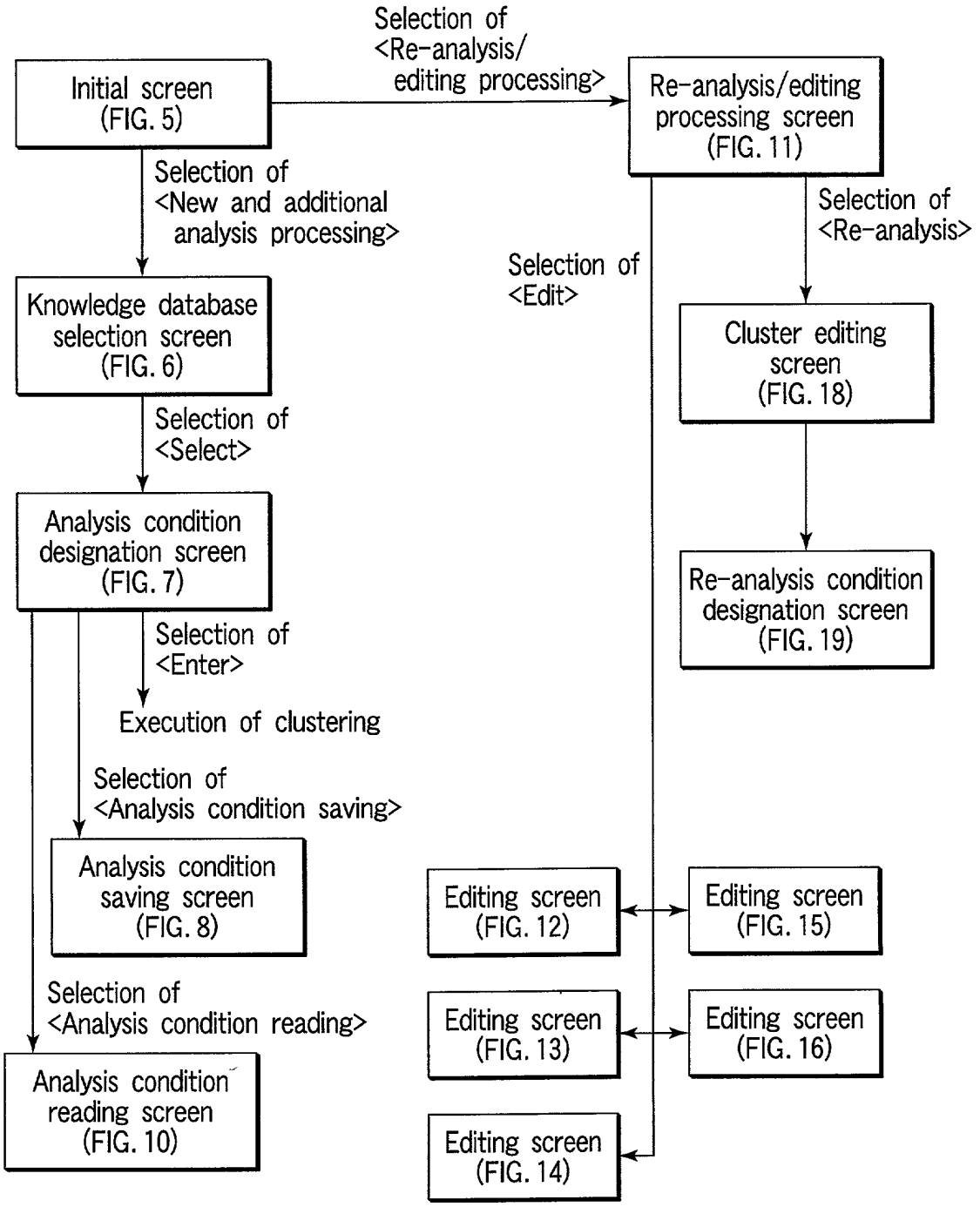

Initial screen (FIG. 5)
Selection of <Re-analysis/ editing processing>
Re-analysis/editing processing screen (FIG. 11)
Selection of <New and additional analysis processing>
Selection of <Re-analysis>
Selection of <Edit>
Knowledge database selection screen (FIG. 6)
Cluster editing screen (FIG. 18)
Selection of <Select>
Analysis condition designation screen (FIG. 7)
Re-analysis condition designation screen (FIG. 19)
Selection of <Enter>
Execution of clustering
Selection of <Analysis condition saving>
Analysis condition saving screen (FIG. 8)
Editing screen (FIG. 12)
Editing screen (FIG. 15)
Selection of <Analysis condition reading>
Editing screen (FIG. 13)
Editing screen (FIG. 16)
Analysis condition reading screen (FIG. 10)
Editing screen (FIG. 14)

FIG. 21